

"Sea-Bee"

a gas-driven

Model Speedboat



By Floyd M. Mix

THIS 32-in. motorboat, designed by F. E. Ludolph, of Chicago, is powered by a 22-oz. midjet gas engine that develops approximately $\frac{1}{2}$ hp. at 5,000 r.p.m., and drives the boat on a circular course at a speed of 30 to 35 m.p.h. The job of building the boat is not difficult, and by starting now, you can get one finished in plenty of time to use this summer, and compete in the National races this fall.

Assuming that all of the items specified in the material list at the end of this article are at hand, let's get right into the constructional details. The frames dimensioned on print No. 965 are made from birch plywood, Nos. 1, 3, 5 and transom from $\frac{3}{8}$ -in. stock and Nos. 2 and 6 from $\frac{3}{4}$ -in. stock. To obtain full-size patterns of the frames, rule sheets of kraft paper into 1-in. squares, then sketch the patterns of the half frames given in the small squares into the large ones freehand. Fold the paper along the center line with the pattern on the outside and cut along this line with a pair of scissors to make both sides symmetrical. Then you fasten the patterns on the plywood, using rubber ce-

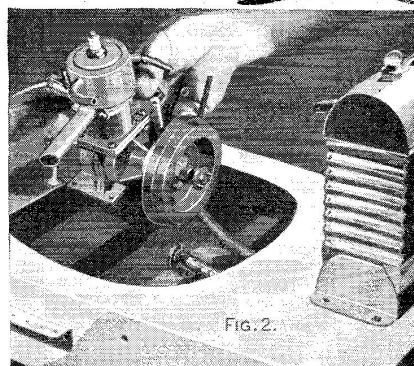
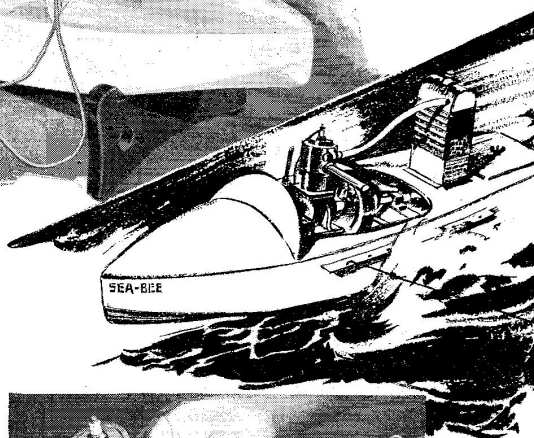
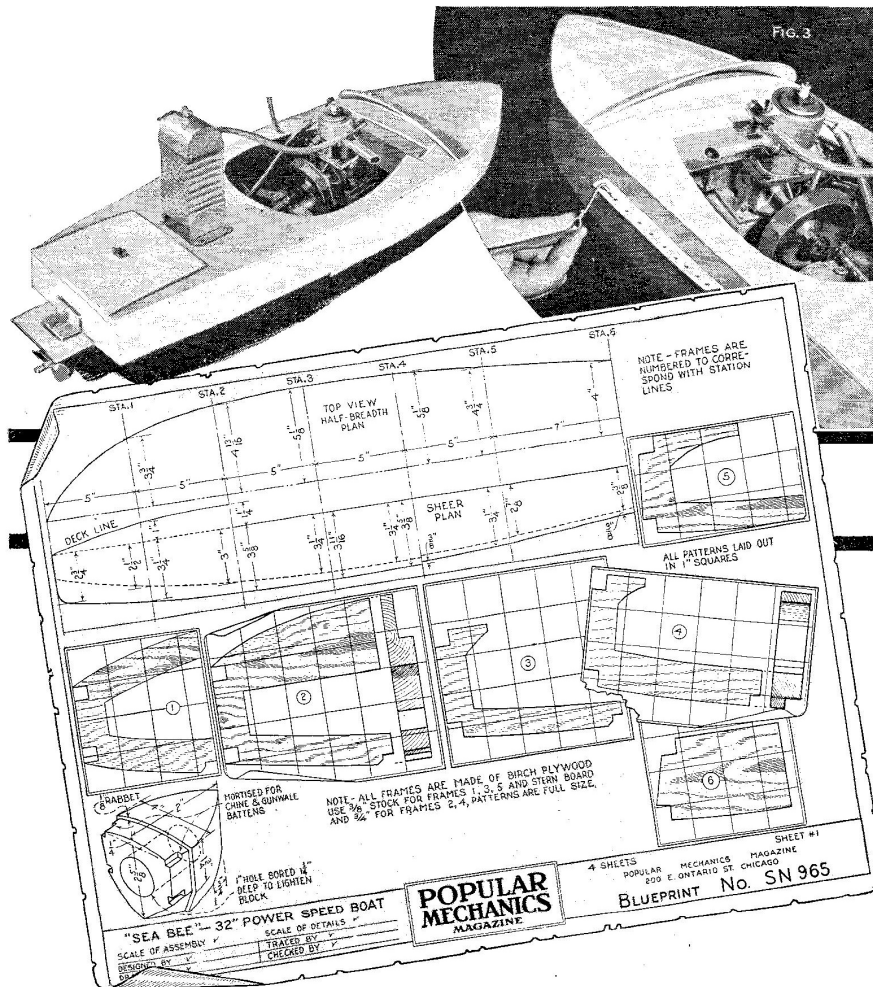


FIG. 2.

ment, and scroll-saw the frames to shape, Fig. 7. Cut the nose block from a piece of birch or white pine 2 by 3 by 6 in. in size. Carve the block to approximate shape and



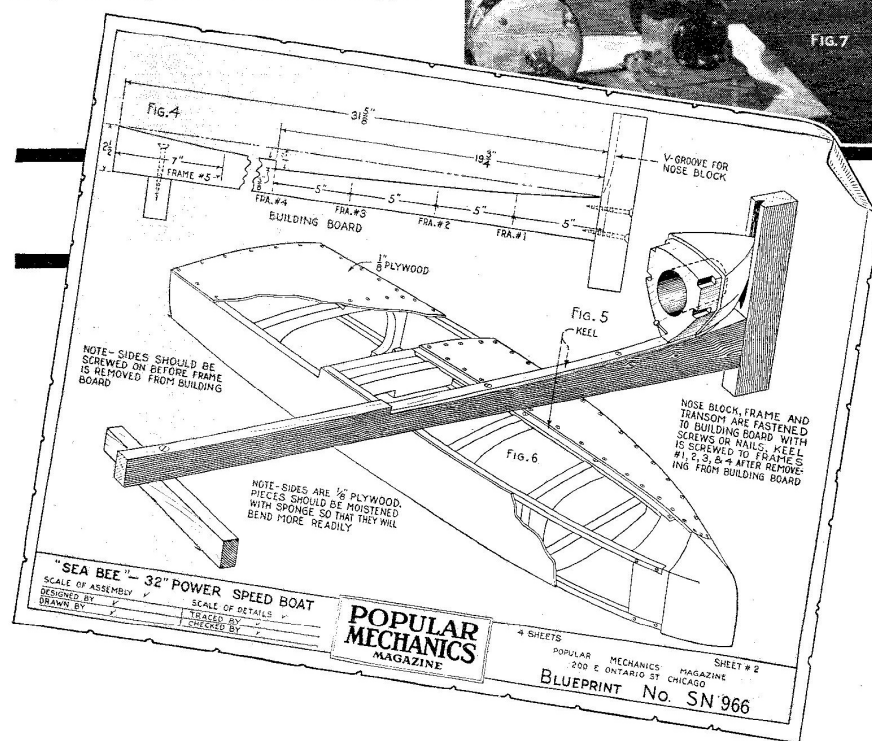
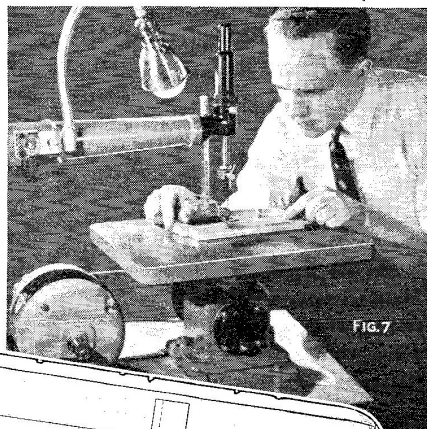
rabbit it $\frac{1}{8}$ in. as indicated. Also, rabbet frames 2 and 4 as shown in the end view of these pieces.

The framework, Fig. 10, is assembled on a building board or form, the upper side of which is cut to the contour indicated in Fig. 4. Aside from temporary nailing required to fasten the frame pieces to the form, all parts of the model are fastened in place with flat-head brass screws and waterproof casein or marine glue. Also, all of the wood surface must be shellacked and given a couple coats of marine paint of the desired shade to protect it from the mois-

ture. Naturally this must be done as the work progresses otherwise part of the inner works would be inaccessible.

Now to get started with the assembling: The keel is fastened to the nose block and then to the building form as shown in Fig. 5. The frames are placed in their respective positions as indicated in the half-breadth plan, print No. 965, and toenailed in place with 1-in. wire brads. Both chine and deck beams are $\frac{3}{8}$ in. square, being ripped from a piece of clear white pine about 36 in. long. These pieces are heated thoroughly over a gas burner so they will

bend without breaking, then fastened to the frames with glue and No. 4 f. h. brass screws, $\frac{5}{8}$ in. long. The heads are countersunk to allow for evening up the frames in preparation for the planking. All planking is $\frac{1}{8}$ -in. birch plywood, and it is glued and screwed to the frame pieces with No. 0, $\frac{3}{8}$ -in. f. h. brass screws. To avoid waste of material and to aid in getting the plywood shaped properly, it is a good idea to make up cardboard patterns of the various pieces required. Where necessary, the



frames are dressed down with a rasp to insure a good fit at all joints. After all the frames have been attached, the side planks are put on. Contacting surfaces are smeared with glue and C-clamps used to hold the wood in place until the screws are driven in. About four screws, staggered to prevent splitting, will be required for each frame piece. After both side planks are in place, the model is removed from the form and the keel is fastened to frames 1, 2, 3, and 4. Fig. 6 shows details

on the bottom planking. By sponging the pieces with warm water, they can be bent readily to the contour of the framework.

Now build a cradle for the model from $\frac{3}{4}$ -in. plywood, as shown in Fig. 18. The motor base, Fig. 9, and the drive-shaft support just ahead of frame No. 4, come next. A battery compartment, which accommodates the four flashlight cells required to operate the engine, is illustrated in Fig. 16. When the battery compartment is in place and a cover made for it, as dimensioned in

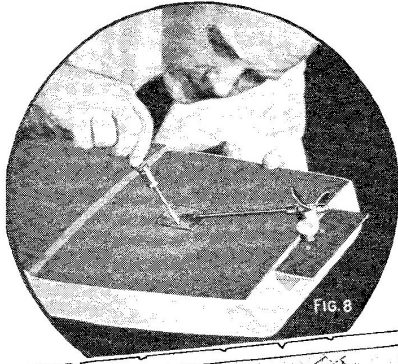


FIG. 8

As soon as all of the drive-shaft mechanism is lined up, you can go ahead with the deck planking, Fig. 11. Start with the forward deck, covering it with $\frac{1}{2}$ -in. strips of $\frac{1}{8}$ -in. plywood. Put on the middle plank first, then gradually work toward the sides. The aft deck is covered with a piece of the same material, openings being cut in it as shown in Fig. 13. On print No. 967, Fig. 12, you will find dimensions for the windshield and mold-

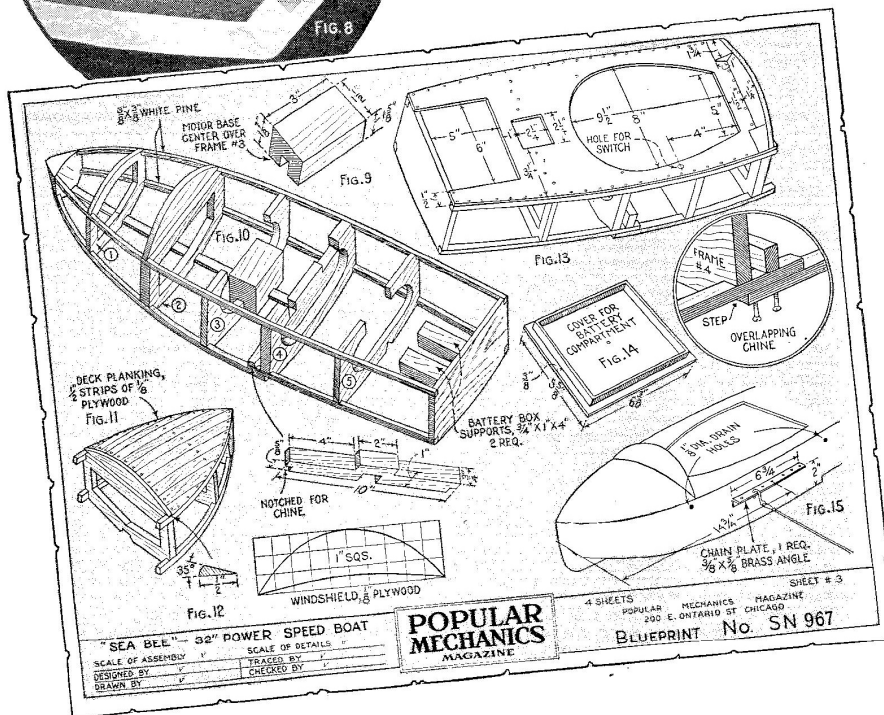
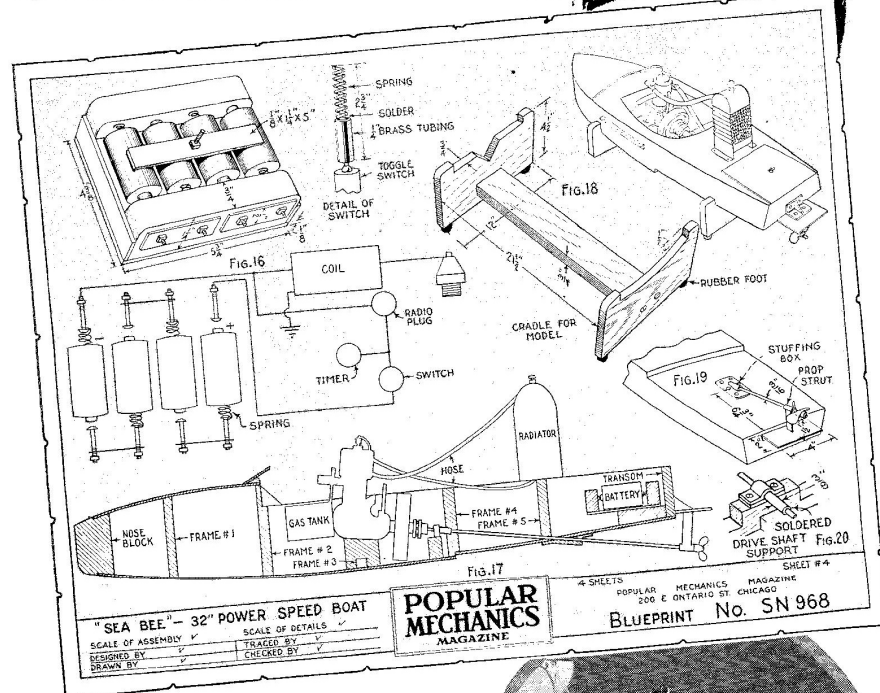
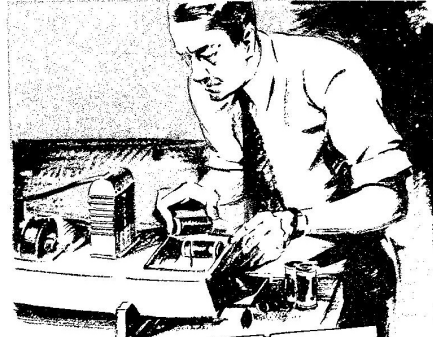


Fig. 14, you can go ahead with the preliminary wiring, using small staples to anchor the wires to the side of one of the deck beams. Notch the top edge of the frames where necessary. Be sure the wires are left long enough to make all the necessary connections after the engine has been installed and the top decking applied. Refer to Figs. 8, 17, 19 and 20 for data on the drive-shaft and propeller installation. To provide a thrust bearing for the propeller shaft, slip a $\frac{3}{4}$ -in. length of $\frac{1}{4}$ -in. brass tubing over it and solder it in place just back of the bearing.

ing to which it is attached. With the windshield on, the main construction is finished, but there's still several odd jobs to clear up. A radio plug must be installed in the forward deck, Fig. 1, so you can use an auxiliary battery for starting, and a switch, detailed in Fig. 16, mounted on the aft deck, to stop the engine at the close of a race. Then there's the chain plate, Figs. 3 and 15, and the installation of the motor, Fig. 2, radiator, and $1\frac{1}{2}$ -in. propeller. For the outside finish on the boat use a coat of thin shellac, and a couple coats of marine paint of the desired shade, sanding

lightly between coats. When ready for a trial run, the model is placed on the cradle and the engine started by twisting the propeller as in Fig. 21. Speed is controlled by adjusting the carburetor needle valve, spark and choke valve before placing the model in the water. A tank of fuel will run the motor from 15 to 20 min.

For a circular race course the boat is attached to a 50-ft. line which pivots on a pole not over 4 ft. above the water level. The model making the best time in a race of not less than three consecutive circular laps is considered the winner.



MATERIAL LIST

- 1 pc. 3/4x24x36-in. birch plywood—frames
- 1 pc. 3/4x12x12-in. birch plywood—frames
- 1 pc. 3/4x18x24-in. birch plywood—cradle, battery box
- 1 pc. 2x3x4-in. birch—nose block
- 1 pc. 3/8x3x36-in. white pine—chines, deck beams
- 2 pc. 1/8x24x36-in. birch plywood—planking, windshield
- 1 pc. 2x4x12-in. white pine—motor base, miscellaneous
- 1 pc. brass angle 3/8x5/8x6 3/4 in.—chain plate
- 1 pc. 3/16-in. steel rod approx. 20 in. long—drive shaft
- 1 1/2 lbs. No. 0, f. h. brass screws 3/4 in. long
- Universal joint, prop strut, stuffing box, shaft bearing, propeller
- Marine glue, several sizes of wire brads and screws

